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A New Species, *Etlingera palangkensis* (Zingiberaceae) from Borneo

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A new species of ginger, *Etlingera palangkensis* (Zingiberaceae) is described from Borneo. Though similar to *E. nasuta*, the new species is clearly distinguished by the color of flowers and shape of labellum.

Key words: Borneo, *Etlingera*, Kalimantan, Zingiberaceae

The genus *Etlingera* Giseke is morphologically distinguished by the tube formed by the filament and staminode-derived labellum above the point of insertion of the corolla lobes (Poulsen 2003). Burtt & Smith (1986) included *Achasma* Griff., *Nicolaia* Horan., and *Geanthus* Valeton into *Etlingera*, and now ca. 70 species are distributed from the Himalayas and SW China through Myanmar, Thailand, Malaysia, Indonesia, to New Guinea and North of Queensland (Larsen *et al.* 1998). Concerning the Bornean *Etlingera* of more than 20 species, Smith (1986) made five informal groups based on previous generic classification. **Group A** (*Nicolaia*): Peduncle 60-130 cm, held erect above the ground; involucral bracts spreading, very showy; flowers numerous; central lobe of the labellum not expanded; anther held more or less erect, thecae dehiscing in upper 1/2-1/3. **Group B** (part of *Achasma*): Peduncle very short, almost always entirely subterranean; involucral bracts usually at least partly embedded in the ground; central lobe of the labellum expanded; anther held at an angle to the free part of the filament. Group B(i): Flowers numerous; petals more or less the same length as the calyx, the dorsal lobe not hooded over the anther; labellum (in the Bornean plants) plain red or with some white on the margin; anther thecae dehiscing in the upper 1/2-1/3 only, sparsely pubescent, the slits hair fringed. Group B(ii): Flowers 4-many; petals longer than the calyx, the dorsal lobe hooded over the anther; labellum red with some yellow centrally, rarely plain red; anther-thecae dehisceing more or less to the base, inner faces densely pubescent. **Group C** (part of *Achasma*): Peduncle and involucral bracts as in group B; flowers many; central lobe of the labellum not expanded; anther held at angle, thecae dehiscing more or less throughout their length; free part of filament absent. **Group D** (*Geanthus*): Peduncle and involucral bracts as in groups B and C, but involucre sometimes much reduced; central lobe of labellum not expanded; anther held erect or slightly angled, thecae dehiscing throughout their length or not. However, recent discovery of the new species by Poulsen *et al.* (1999) and Sakai & Nagamasu (2003) necessitated changing her criteria, and the latter study united Group B (ii) and C into group C' and leave Group B (i) as Group B'. Molecular phylogenetic analysis using DNA sequence data of the plastid group II intron of *rps*16 and the internal transcribed spacer (ITS) demonstrated that *Etlingera* as proposed by Burtt & Smith (1986) is monophyletic group.

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During the exploration in Central Kalimantan, we found an interesting *Etlingera*. After examination of the herbarium specimens at BORH, E, HYO, K, and KYO, and detailed comparison with related taxa, we confirmed this to be a new species. Here we describe a new species, *Etlingera palangkensis* A. Takano *et* Nagam.

Etlingera palangkensis A. Takano et Nagam., **sp. nov.,** Figs. 1-2a, 2b.

Haec species nova *E. nasutae* valde similis, sed a qua labello omnino luteo, labelli lobo centrali angustiore, ejus lobulis parvioribus differt.

Typus: INDONESIA, Central Kalimantan, Palangka Raya, Jl. Cilik Riwut Km. 28, Nyaru Menteng Arboretum (02°12'00"S, 113°46'43"E), ca. 25 m altitude, under lowland peat swamp forest, Dec. 13, 2004, *H. Okada, H. Nagamasu, H. Tsukaya, A. Takano, A. Naiki, KT-627* (Holotype: BO, Isotypes: E, HYO, KYO).

Terrestrial herb. Rhizome relatively slender, long creeping, white. Leafy shoot 3.6 m, leafless for 1.6 m. Frond c. 0.8 m wide. Leaves up to 13 pairs; sheath striate, glabrous; ligule 1 cm long, entire, glabrous; petiole to 1.0 cm long; lamina up to 40 cm long, 10 cm wide, narrowly oblong, base unequally cuneate, apex shortly acuminate, glabrous on both sides. Inflorescence c. 12 flowered, embedded in the ground; peduncle to c. 5 cm, white; peduncular scales increasing in size, upper to c. 3.5 cm long, c. 1.1 cm wide, narrowly obovate, striate, sparsely pubescent, apex acute, margin ciliate, overlapping; spike c. 8 cm long, c. 2 cm wide; involucral bracts 4-6, c. 4.2 cm long, c. 0.6 cm wide, narrowly obovate, apex acute, outermost bract papery, pubescent outside, glabrous inside, white; floral bracts outermost c. 3.5 cm long, c. 0.6 cm wide, narrowly elliptic, apex obtuse, incurved, pubescent outside, glabrous inside, margin ciliate at the base, white; bracteoles 2.5-3.0 cm long, tubular, unilaterally fissured for 1.5-1.8 cm long, apex 2-toothed, almost equal, sparsely pubescent outside, glabrous inside, white. Flower blood-red and yellow; calyx 55-57 mm long, tubular, unilaterally fissured for 25-28 mm long, apex usually trilobed, sparsely pubescent outside, glabrous inside, white; labellum and filament joined for 7-20 mm above the insertion of the petals, forming a corolla tube 40-58 mm long in total (Fig. 1a); corolla tube white, pubescent with long hairs inside at 9-13 mm below throat, glabrous outside; dorsal corolla lobe 15-23 mm long, 6-7 mm wide, narrowly elliptic, glabrous on the both surfaces, longer than calyx and hooded over the anther, blood-red; lateral corolla lobes 20-22 mm long, 3-4 mm wide, lanceolate, blood-red; labellum trilobed, 30-35 mm long, basal part 12-15 mm long, 14-15 mm wide, broadly ovate, central lobe glabrous, 17-18 mm long, 7-8 mm wide, spathulate, apex shortly bilobulate, the lobules 2-10 mm long, 2.5-4 mm wide, entirely and uniformly yellow. Filament 1-2 mm long; anther c. 5 mm long, strongly angled (50°- 60°) or strait, dehiscing for its entire length, ciliate with short hairs around the opening, apex emarginate and ecristate, white; stigma c. 2 mm wide, ciliate around the mouth, white; style 42-65 mm long, pubescent with long hairs on the upper part; ovary c. 5 mm, glabrous; epigynous gland c. 5 mm tall, surrounding the base of the style, bilobed. Fruit unknown.

Distribution. Central Kalimantan. So far, we found this species only from the type locality.

Etymology. This new species was named after the capital city of Central Kalimantan, Palanka Raya, where the collection was made.

Notes. This species shows two floral morphs within an inflorescence. The flowers at margin of the inflorescence have angled anther, longer corolla tube (47-58 mm) and joint part of labellum and filament (c. 20 mm), however, flowers in the center of the inflorescence show strait anther, shorter corolla tube (c. 40 mm) and the joint part (c. 7 mm). As far as we know, E. nasuta shows similar floral dimorphism (Takano & Avelinah Julius, personal obser-

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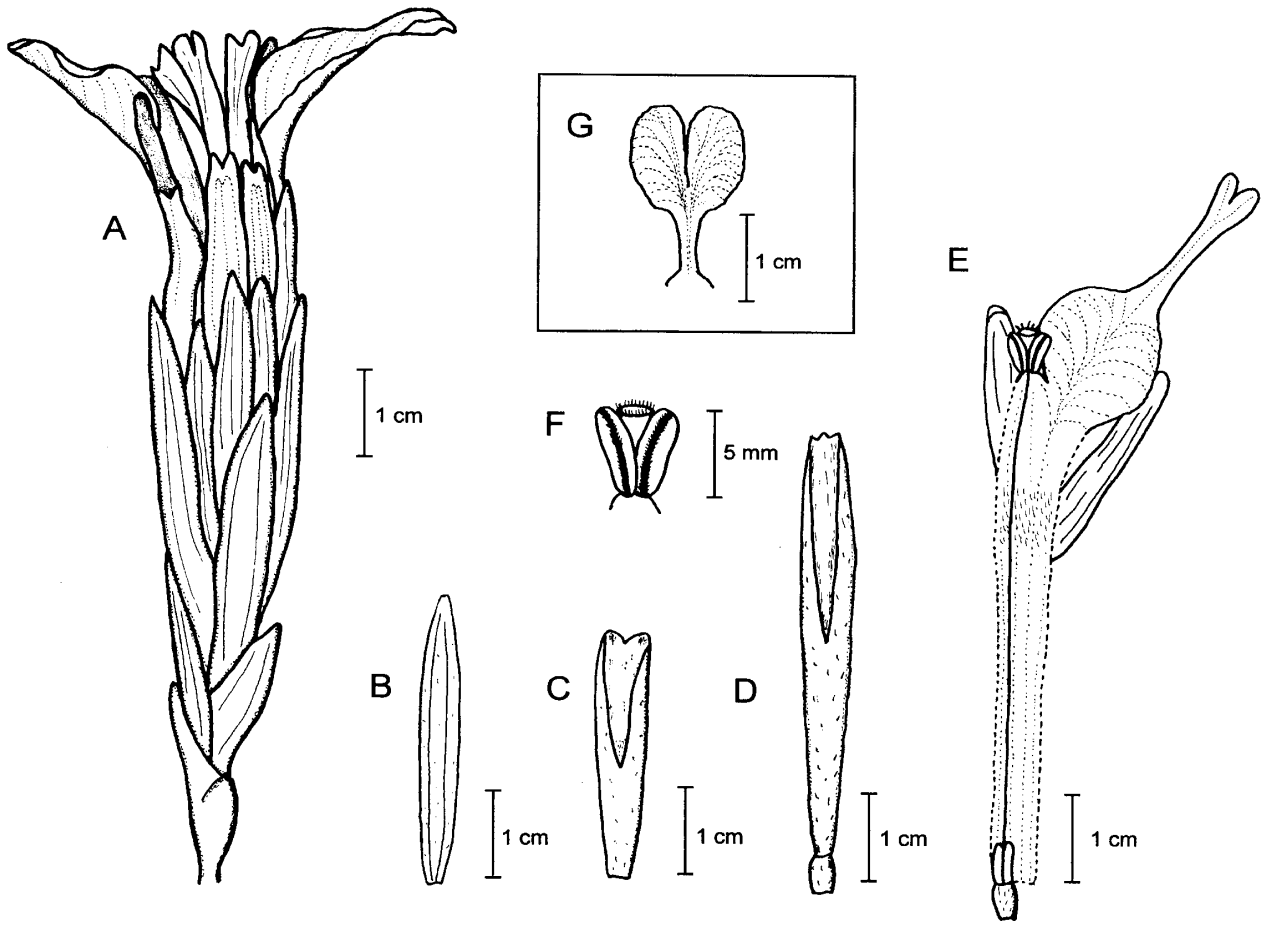

FIG. 1. A-F. *Etlingera palangkensis* (drawn from *H. Okada et al. KT-627*). A: Inflorescence. B: Floral bract. C: Bracteole. D: Calyx. E: Flower at the margin of the inflorescence, dissected. F: Anther and stigma. G. *Etlingera nasuta*, central lobe of labellum (drawn from *S. Sakai 430*).

vation).

Etlingera palangkensis apparently belong to Group C' sensu Sakai & Nagamasu (2003)(= Smith's B(ii)) with very short peduncle, almost subterranean, 4-6 involucral bracts embedded in the ground, elongated central lobe of labellum and anther-thecae dehiscing throughout their length. However, to place the new species into Group C', we have to enlarge the definition in the description of labellum as follows; labellum red with some yellow centrally, rarely plain red or plain yellow.

In the Group C', seven species have been known from Borneo: *Etlingera inundata* S. Sakai & Nagam., *E. coccinea* (Blume) S. Sakai & Nagam., *E. nasuta* (K. Schum.) R. M. Sm., *E. belalongensis* A. D. Poulsen, *E. rubromarginata* A. D. Poulsen & J. Mood, *E. sessilanthera* R. M. Sm., *E. baramensis* S. Sakai & Nagam. (Sakai & Nagamasu 2003). The latter four species, however, clearly differ from *E. palangkensis* since their central lobe of the labellum is not so elongated as the new taxon. *Etlingera inundata* is distinct from *E. palangkensis* by having the smaller number of flowers per inflorescence (2-3) and plain red flowers. Narrow involucral bracts (less than 1 cm wide) prevent the new taxon from being placed into *E. coccinea* (in which 1.5 cm wide or more).

Etlingera palangkensis is most similar to *E. nasuta* in the Group C' sharing an elongate central lobe of labellum, petals longer than calyx, a dorsal

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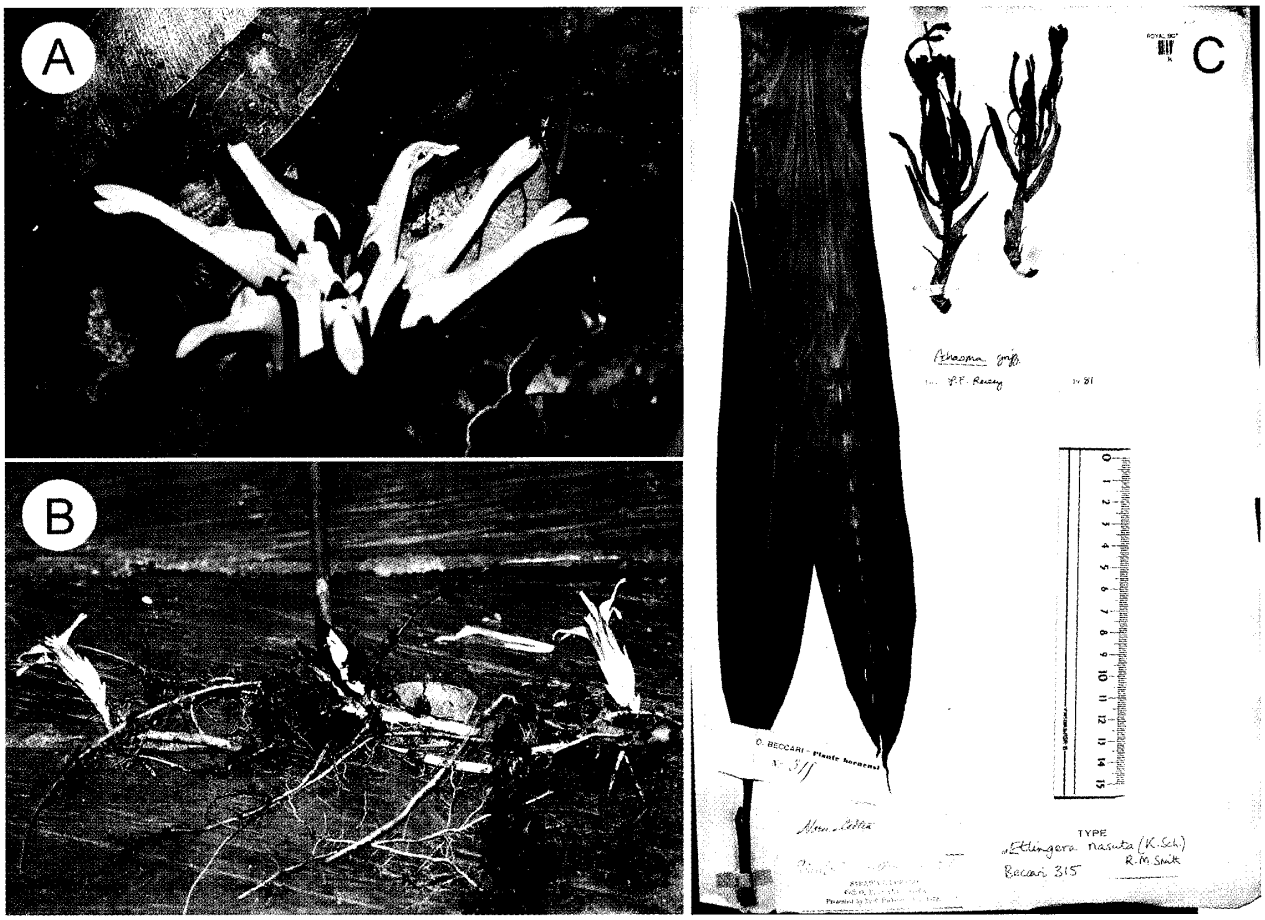

FIG. 2. A & B. *Etlingera palangkesnsis*. A: Habit. B. Inflorescences born from a long stolon. C. *Etlingera nasuta. Beccari 315* (K, isotype).

lobe hooded over anther, and narrow (under 1 cm wide) involucral bracts. We examined the isotype (*Beccari 315* at K, Fig. 2C), and other material of *E. nasuta* from Sarawak [ex. *Christensen 1121* (K), Lubok Antu District, Delok River, secondary forest near Nanga Sumpa; *Bogner 1385* (K), at Melugu, Tekalong village; *S. Sakai 56* (KYO), Semangoh Forest Reserve, Sarawak; *S. Sakai 419* (KYO), 1st Division, Kubah National Park, Sarawak; *S. Sakai 430* (KYO), ibidem], and Sabah [*A. Julius & A. Takano 304* (BORH, HYO), Long Pasia] and found the following differences with the new taxon as follows: 1. size of lobules is 10-15 mm long and 5-10 mm wide in *E. nasuta*, much larger than *E. palangkensis*. 2. color of the flower is plain- or pinkish red in all specimens examined in *E. nasuta*, and differs from that of the new species with plain yellow labellum. Color variation of flowers within species is known in *Etlingera* (ex. *E. littoralis*), however, the differences are not only in color, but shape and size of the central lobe of lalellum. Therefore, we decide to propose *E. palangkensis* as a new species.

Also, we update in part the latest key to Bornean *Etlingera* (Sakai & Nagamasu 2003) as follows.

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10a. Involucral bracts under 1 cm wide ····· 10bis
10b. Involucral bracts 1.5 cm wide or more; labellum red, usually with some yellow in centre ····· **E. coccinea**
10bis, a. Labellum plain red; lobules of central lobe of labellum more than 1 cm long ····· **E. nasuta**
10bis, b. Labellum plain yellow; lobules of central lobe of labellum less than 1 cm long ····· **E. palangkensis**

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